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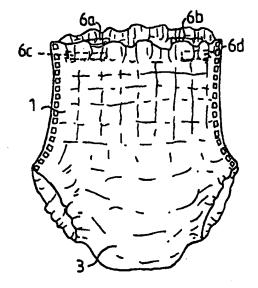
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(54) Title: ABSORBENT PANT DIAPER

(57) Abstract

In order to solve the problem of pant diapers (1) slipping down, without an excessive number of elastic threads or large and strong, and thus uncomfortable, elastic threads, at least portions of the surface of the waist portion facing the skin of the user have been provided with a hot-melt adhesive, for example to form a friction increasing surface (6a-d) against the skin, preferably sprayed on as points in a pattern, possibly only at the right and left hip portions of the waist portion.



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#### ABSORBENT PANT DIAPER

The present invention relates to a pair of absorbent pants or a pant diaper for one-time use, comprising a crotch portion, front and back portions adjacent thereto, which are joined to form a waist portion surrounding the waist of the user, said portion being circumferentially elastic, an absorbent body, which is held tightly against the body of the user by the elastic waist portion. Such an absorbent pant diaper is known by our own Swedish patent application 9200663-4, having around the waist elastically extensible elements, for example elastically extensible strings, strips, film, fibre fabric, laminates or the like, which are designed to hold the pant diaper in place on the user and prevent it from slipping down from its intended position of use. In order to prevent the elastic tension from being uncomfortable for the user, the known pant diaper is provided with a large number of elastic elements, which, by virtue of their number, on one hand exert a sufficient total tightening force around the waist of the user for the pant diaper to not slip down, and, on the other hand, each does not exert an excessive local pressure on the user. However, the use of a large number of elastic elements involves a relatively high material cost. It is therefore desirable to be able to reduce the need for elastic elements in the waist portion of the pant diaper without having to deviate from the requirement that the pant diaper should stay up comfortably on the user.

These and other problems are solved by a disposable absorbent pant diaper of the type described by way of introduction which is characterized in that at least portions of the surface of the waist portion facing the skin of the user are provided with a friction agent to form a friction increasing surface against the skin. This

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prevents the pant diaper from slipping down, in a very inexpensive and simple manner without having to use many elastic threads. This makes it possible to supply a very limited number of pant waist sizes while still requiring that the pant diaper should stay in place during use. The present invention can, however, also be used with advantage on a pant diaper having a large number of elastic elements in the waist portion. In this case, it is possible to reduce the tension which the elastic elements exerts on the user, since the frictional force of the friction agent compensates for the reduced friction resulting from the lowering of the elastic tension. It is of course possible to use the invention on other types of pant diapers as well, which do not use a large number of elastic elements in the waist, for the purpose of improving the friction against the body of the user, i.e. improving the stay-up capacity of the pant diaper.

US-A-4 834 739 describes the use of friction coatings on a sanitary napkin to keep the napkin in place relative to the underpants and thighs of the wearer. This invention is, however, directed to an entirely different problem as is mentioned above and an entirely different field, namely a sanitary napkin which is held up by the user's underpants.

The present invention will now be described in more detail with reference to the accompanying drawings, where:

Fig. 1 shows a schematic plan view of an absorbent pant diaper according to one embodiment of the invention as seen towards the outside of the pant diaper in a state in which the front and back portions of the pant diaper have still not been joined for forming the waist opening and the leg opening, and in which the elastic elements in the pant diaper are in their stretched-out state;

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Fig. 2 shows a section along the line II-II in Fig. 1;

Fig. 3 shows a section along the line III-III in

Fig. 1;

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Fig. 4 shows a view from the front of the pant diaper in its assembled state;

Fig. 5 shows a pant diaper according to the invention with the hot-melt material laid out in a spiral shape; and

Fig. 6 shows the invention embodied in a pair of disposable menstrual briefs.

Fig. 1 thus shows an absorbent pant diaper in its still non-assembled state, i.e. the waist and leg openings of the diaper have still not been formed. The pant diaper comprises a front portion 1, intended to be applied to the front of a user, a back portion 2, intended to be applied to the rear of the user, and a crotch portion 3 between the front and rear portions 1, 2 intended to be applied between the legs of the user. The front and back portions 1 and 2 also each have two side edges 4, 5 intended to be attached together to form a pant diaper according to Fig. 4. The pant diaper further comprises an absorbent body 14 extending in the longitudinal direction of the diaper and which is enclosed between an inner cover layer 15 and an outer cover layer 16. The inner cover layer 15 is applied on the wetting side of the absorbent body 14 facing the user. It is liquid-permeable and consists, for example, of fibre fabric, a so-called non-woven. The outer cover layer 16 is liquid-impermeable or at least hydrophobic and can, for example, consist of a layer of polyethylene or a fibre fabric which has been coated or laminated with polyolefines, for example, so that it is made liquid-impermeable or at least hydrophobic. The absorbent body 14 can, for example, comprise cellulose fibres as absorbent material. Furthermore, it can comprise other absorbent materials such as polymer hydrocolloid materials, for example in particle form.

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                                                                                                                                                                                                                                                            blecensioned and whih in this embodiment have a greater 17 contractive force than the individual elastic elements of the described above
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                                                                                                                                                                                                                                                                      According to the invention, portions 6a-d of a friction portion ficing the waist
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                                                                                                                                                                                                                                                                                                  rulling the user has portions ba-d or a returning the skin against the friction against down.

agent in order to increase at aner from slipping down.

and thus prevent and thus prevent
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                                                                                                                                                                                                                                                                                                                                     malerial of not-melt type, 1.e. a rusible grue, which and provides a coating with a surface which is smooth and
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non-porous. It must, however, not stick fast to the skin of the user, even at such high temperatures as 50°C. Flexible in this context means that the material is compliant and thus can follow and be stretched to the same extent as the material in the waist of the pant diaper when it is stretched as the user moves.

A suitable hot-melt material for use in this context is a material based on thermoplastic rubber, for example styrene isoprene rubber (SIS), styrene butadiene rubber (SBR), or styrene ethylene butadiene styrene rubber (SEBS). Other hot-melt materials can also be used, for example within the following groups: ethylene vinyl acetate copolymers, cellulose acetate butyrate, ethyl cellulose, and acrylic materials.

Other examples of friction agents are material of foamtype and water-based materials, for example polyvinyl acetate.

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Portions 6a-d applied at the hip portions but not over the seams between the edge portions 4, 5 and not directly in the centre of the front and back portions have proved to be advantageous since the hands are placed there when pulling the pant diaper on and off. But the elastic hotmelt material can, of course, be applied in a strip or string extending around the entire inside of the waist portion, but this can, however, mean that certain portions of the hot-melt strip will stick to the stomach or backside when the pant diaper is pulled on or off. The hot-melt material can also be applied in the form of drops of glue or in spiral patterns which have been sprayed on various areas around the waist. One example of such an alternative application of hot-melt adhesive is shown in Fig. 5, where the material has been applied by a spray nozzle in a spiral form extending in a strip around the entire waist portion.

It is thus possible with the present invention to make the elastic threads 17 and/or 33 with less tension or fewer number and at the same time achieve the same stayup capacity with better wearer comfort. In order to achieve the same wearer comfort without the present invention, it would have been necessary to provide pant diapers with many different waist sizes, and this would make the product much more expensive and more difficult to use for the consumer.

Fig. 6 shows the invention embodied in a pair of menstrual briefs where correspondingly labeled strips of hotmelt friction increasing material 6a-d have been applied around the elasticized waist portion of a pair of menstrual briefs to achieve the same advantages as regards comfort and holding up capacity as are achieved in the pant diaper example discussed above.

The menstrual briefs are also provided with friction increasing hot-melt patches 19 along the leg openings facing the buttocks. They prevent the edges of the leg openings in the rear of the briefs from sliding across the buttocks and into the crease between the buttocks, causing discomfort and bunching of the absorbent material.

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#### CLAIMS

- 1. Disposable absorbent pant or pant diaper, comprising a crotch portion (3), front and back portions (1, 2) adjacent thereto, which are joined to form a waist portion surrounding the waist of the user, said portion being circumferentially elastic, an absorbent body (14), which is held tightly against the body of the user by the elastic waist portion, characterized in that at least portions of the surface of the waist portion facing the skin of the user are provided with a friction agent to form a friction increasing surface against the skin.
- 2. Disposable absorbent pant or pant diaper according to Claim 1, characterized in that the friction agent is flexible and compliant with the elastic waist portion.
- 3. Disposable absorbent pant or pant diaper according to Claim 1 or 2, characterized in that the friction agent consists of a material of hot-melt type.
- 4. Disposable absorbent pant or pant diaper according to one of the preceding Claims, characterized in that the hot-melt material is based on a thermoplastic rubber.
  - 5. Disposable absorbent pant or pant diaper according to one of Claims 1-2, characterized in that the friction agent consists of a water-based material.
    - 6. Disposable absorbent pant or pant diaper according to one of Claims 1-2, characterized in that the friction agent consists of a material of foam-type.
    - 7. Disposable absorbent pant or pant diaper according to one of the preceding Claims, characterized in that the

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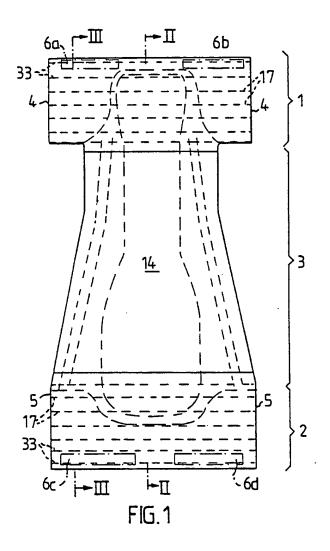
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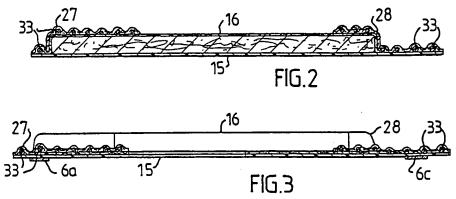
friction agent is arranged in portions extending in a row around the entire inside of the waist portion.

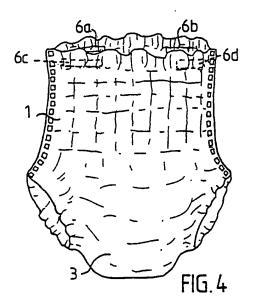
- 8. Disposable absorbent pant or pant diaper according to one of Claims 1-6, characterized in that the friction agent is arranged in portions which only extend along the right and left hip portion of the waist portion.
- 9. Disposable absorbent pant or pant diaper according to one of the preceding Claims, characterized in that the friction agent extends in a continuous strip along the waist portion.

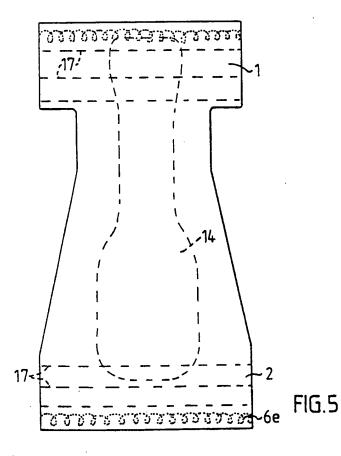
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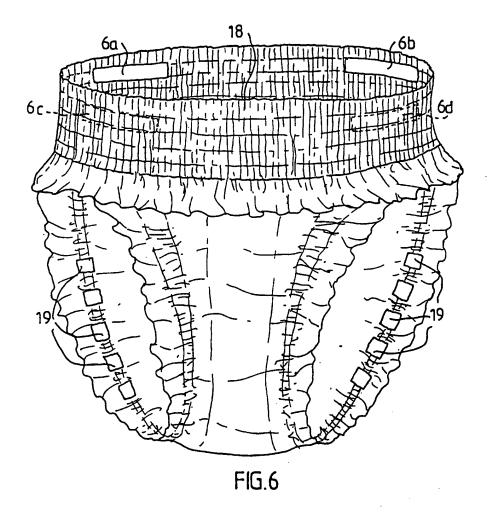
10. Disposable absorbent pant or pant diaper according to one of Claims 1-8, characterized in that the friction agent is arranged in the form of points on the inside of the waist portion.











#### INTERNATIONAL SEARCH REPORT

International application No. PCT/SE 95/00169

### A. CLASSIFICATION OF SUBJECT MATTER IPC6: A61F 13/72 // A41B 9/14, A41B 13/04 According to International Patent Classification (IPC) or to both national classification and IPC B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC6: A61F, A41B, A41F Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched SE, DK, FI, NO classes as above Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPI, CLAIMS C. DOCUMENTS CONSIDERED TO BE RELEVANT Relevant to claim No. Citation of document, with indication, where appropriate, of the relevant passages Category\* 1,2,9 US, A, 3076201 (JACK A. WINTER), 5 February 1963 Х (05.02.63), column 1, line 9 - line 12; column 1, line 53 - line 56; column 2, line 11 - line 14 3-8,10Y 3-8,10US, A, 1817991 (JOSEPH H. LANGROCK), 11 August 1931 (11.08.31), page 1, line 1 - line 5; page 2, line 20 - line 25 See patent family annex. Further documents are listed in the continuation of Box C. later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention Special categories of cited documents: "A" document defining the general state of the art which is not considered "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive to be of particular relevance erlier document but published on or after the international filing date document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other step when the document is taken alone document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other document published prior to the international filing date but later than "&" document member of the same patent family the priority date claimed ing55ational search report Date of the actual completion of the international search 17 May 1995 Authorized officer Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Ingrid Falk Telephone No. +46 8 782 25 00 Facsimile No. +46 8 666 02 86

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No. PCT/SE 95/00169

1	35/ 00105	PC1/3				
	Publication date	Patent family member(s)		Publication date	document earch report	Patent cited in se
			NONE	05/02/63	3076201	US-A-
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